



Ø BEAT



**COLORADO SPRINGS,
COLORADO**

OCTOBER 1988

PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.
P.O. Box 16521
Colorado Springs, CO 80935

FIRST CLASS MAIL



Ø BEAT



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ZERO BEAT is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., P.O. Box 16521, Colorado Springs, Colorado 80935. Cost is 50¢ per month for non-members or a \$4.00 per year subscription. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Keith Goobie NYØT, 5335 Coneflower Ln., Colorado Springs, CO 80917 637-1525

Message From The President...

It has been a good year for the PPRAA. We had an outstanding swapfest, many public service events, a super picnic, and best of all participation from the members has been great. We have seen our committees grow and become viable parts of the Special Service Club that we are. We have seen many new novices as well as numerous upgrades among our membership. We have a new meeting place that will allow our club to grow. Finally, at our last meeting, we were presented with a **CERTIFICATE OF MERIT** from the Colorado Section leader. Because of all the individual participation it has been a very easy year to serve as President.

One final item remains before my term expires...that is **ELECTIONS!** I hope we can have a very large turnout at the October meeting because election night is the most important meeting of the year. Elections are your opportunity to take an active role in the administration of your club. There are several positions on the Board of Directors open as well as the four club officers. Let's have a **REAL** election...one with at least two people running for each office. Your club needs your support whether it is by running for an office or voting! If you are interested in running for an office (no prior experience needed) give me a call (593-8352) or contact any member so your name can be placed in nomination.

Thanks for your support in 1988! I really enjoyed the opportunity to serve our club. 73's and C U at the meeting!

Ron NKØP

The American Radio Relay League

awards this
Certificate of Merit
to
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PIKES PEAK RADIO AMATEUR ASSOCIATION

in recognition of your outstanding
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and your public service work in Colorado Springs,
and Southern Colorado.

Wm. B. Shepherd
William B. Shepherd, 2002
Colorado Service Manager



September 22, 1988

Giuseppe's Depot Restaurant
10 S Sierra Madre
Colorado Springs, Colorado

Dear Sir:

On behalf of the Pikes Peak Radio Amateur Association, I would like to thank you for allowing us to have our monthly meetings in your establishment. We have thoroughly enjoyed the service, atmosphere, and especially, the food. We regret that our club has grown to the point of needing a larger meeting place. We assure you, however, our members and their families will continue to enjoy your fine food as often as possible. Many thanks for your hospitality.

Sincerely,
Ronald Deutsch
President, PPRAA

"THE VIEW FROM THE PEAK"

by George Hinds, N8CIX

IF YOU'RE SHIPPED OFF TO "JA" LAND here are a couple of items to think about if you wish to operate while over there: 1) a reciprocal license to operate in Japan for U.S. hams costs between \$80 and \$150 per year, or even for a short visit; and 2) you can't use U.S. manufactured rigs in Japan - they are not approved for use! How's that grab ya? Sound like an indirect trade barrier?

While you think about that jolt, remember that Japanese amateurs can operate in the U.S. on a reciprocal license free of charge and Japanese rigs obviously aren't barred from the U.S. by a "non-approved" trade barrier.

This interesting bit of news was published in the September issue of the ARNS Bulletin, a paper for ham radio club editors.

FOR THOSE WILLING TO "GET INVOLVED" amateur radio can offer a way out of the humdrum of day-to-day tasks.

Example: a call one morning last month from Bob Bergman (WBOFLU) told me of a search underway for a lost hiker near the Seven Lakes area off the s.w. side of Pikes Peak. Bob, as a ham communications volunteer to Teller Co. Search and Rescue, had been busy passing traffic for some time and needed relief as he had to go to work.

It seems that two hikers became separated near the Seven Lakes area on the southwest side of the Peak; one had driven out in the darkness and had sought help via CB. Then the call got over on to the ham bands and, though it was after 10 p.m., NOJAA Paul, NOJDU Alex, NOIOG Bill, and NOJEE Matthew became involved and set about in seeking ways and means to call the problem to the attention of the authorities.

Eventually, they found themselves enroute in the night to a point on the Gold Camp Road about 7 miles west of Victor. They stayed for many hours to help the search personnel who arrived in the morning, aided by some other hams in Colorado Springs as relay stations, and, when it became an official missing person search by the sheriff, they then aided Bob WBOFLU in relaying traffic to S&R headquarters in Woodland Park. When Bob had to be relieved, I and Bud Thompson, NOAA from Cripple Creek moved on to the scene and took over to let the Colorado Springs fellows go home and get some much needed rest.

Two TV news helicopters came over to assist the all-day search; the irony of the situation after so much effort was the "lost" hiker called about supper time to inquire if he was being sought - apparently he had walked and hitch-hiked back to the city and was then at home!

So it goes - a worthless effort in one respect, but an excellent field practice exercise for the time when the next call comes along. And a demonstration of how quickly there are so many of the younger, newer amateur radio folks who will not hesitate to jump in and help.

IT MAY HAVE A "CB-TYPE" NAME, BUT IT PERFORMS LIKE A WINNER is one way to describe the Uniden HR2510 ten-meter mobile rig. The "President" name may fool some into thinking it's a CB rig (but the user manual by Uniden emphatically states it's not to be put in transmit mode until or unless one has the required ham license. I picked one up and I've had a barrel of fun since. With AM, CW, USB, LSB, and FM, and 25 watts output, it's small but potent. Out driving, I've worked DX to Finland, New Zealand, Central and S. America and up into Canada, Florida, Maine, etc., etc. A converted CB Larsen antenna works great. A built-in noise blanker is effective. A draw-back: no offset mode so as to work FM 10M repeaters.

73, George N8CIX-0

The next club meeting will be at the Hewlett Packard facility at the intersection of Union and Lexington Avenues. Meeting will start at 730 pm and if you have questions please refer to last month's *O-Beat*. The main agenda item will be the Club elections

ANTENNAS

by Chris Smith
N1UE

This month's column begins a fairly involved topic that will conclude in future issues. It is a topic that has been of interest to me for some time, and for which I've recently found an old article that really covers the subject well. Oh yes- it even has something to do with antennas!

The topic is that of quadrature hybrids. Unless you're an electrical engineer with experience in analog RF or communications, you probably are unfamiliar with hybrids.

The term is an old one, going back to the early days of telephone. The first telephone systems had a real problem: the caller could barely be heard while you own voice deafened you. So a circuit was devised to largely cancel out the signal your transmitter could cause in your receiver (telephone terminology for mike and speaker), while allowing the caller to be heard full strength. The solution was an ingenious arrangement of transformer windings, with careful consideration given to the relative phases in the circuit. Rather than call this device an "ingenious arrangement of transformer windings," it was given the name of "hybrid coil."

A quadrature hybrid is a related device. It may work at audio frequencies, or it may be designed for RF or even microwaves. There are even designs that work for light! The reason it's a "quadrature" hybrid, is because one input signal is split into two output signals that are 90 degrees out of phase.

Quadrature hybrids are usually built from common, 180 degree hybrids. These split one signal into two signals 180 degrees out of phase, and can be fairly simply built with ordinary transformers. To make a common hybrid into a quadrature hybrid, you need some kind of phase shifting circuit. If you are only interested in one frequency, something simple like a quarter-wavelength piece of coax will work. It's when you want a wideband circuit that things get tough.

Recently I ran across a reference to a 1960 article in the IRE transactions on circuits on just this subject. The author had completely solved the problem! Somehow, though, the article has slipped the attention of modern EE's, and many I talked to had no idea of how to build wideband phasing networks.

Figure 1 shows the basic circuit that is employed. It is of a type called an "all-pass" filter. You're familiar with "low-pass" and "high-pass" filters, well, this is sort of a combination of both. Its purpose is to phase shift signals, since all frequencies pass equally well through it.

The quadrature phase shifting circuit employs four such circuits. Figure 2 shows the circuit. The component values work for a 50 ohm system over a frequency range of 2.5 to 30 MHz, with a maximum phase error of under 3 degrees. The ideal circuit shows an amplitude imbalance. The lower right lattice can be deleted with little harm, simplifying the circuit while increasing the phase error by about a degree. The circuit can also be used from 1 to 50 MHz with less than a 10 degree error. That's what I call a wideband circuit!

A future column will cover the design details, and of course, some uses, antenna-related and otherwise, for the dad-blamed thing.
Chris N1UE

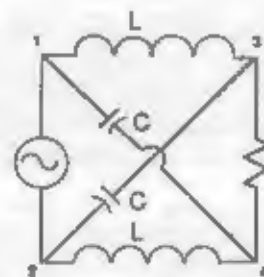


Figure 1. General All-Pass Network. L's and C's may be interchanged by re-numbering terminals.

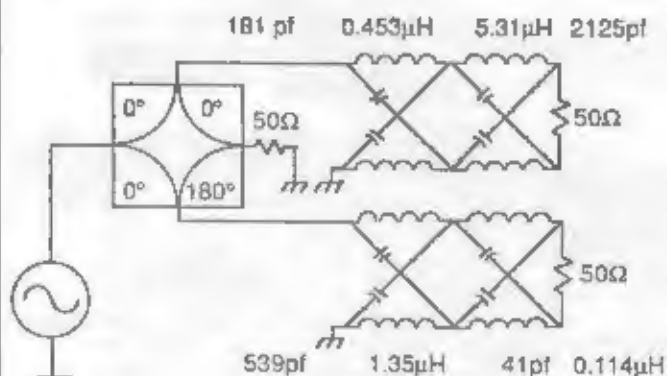


Figure 2. Quadrature Hybrid Constructed from 180°-Hybrid and Quadrature Phase Shift Network

AMATEUR RADIO LICENSE EXAMINATIONS

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WHERE: First United Methodist Church
420 North Nevada Avenue
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WALKINS: Allowed
TALK IN: 146.37/97

APPLICANTS

1. Original FCC license, if any
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4. \$4.55 check or M.O. payable to ARRL/VEC
5. Completed FCC form 610
6. If physically handicapped, a physicians certificate describing the nature of the disability. Arrangements should be made prior to testing

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For more information contact:
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CONGRATULATIONS

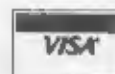
Belated congratulations are offered to the successful participants of the recent VE testing. Editor's Note: My apologies for getting this in late!

Test site: Colorado Springs, Co.
Session Date: 20 Aug 1988
Sponsor: Pikes Peak Amateur Radio Assoc.

The data is presented in the following format: Applicants: Call: License Class: License Name: Sign: before session: Earned:

Thomas Cox: WD0GVH: General: Advanced
Charles Phelps: KB0CVT: Tech: Advanced
Harold Kittle: None: None: General
Bernard Forester: KB0PAW: Novice: Tech
Gary Hinds: KB0CMP: Novice: Tech
Clifford Kohler: KB0CUW: Novice: Tech
Norman L. Steeves: KB0CUY: Novice: Tech
Lynn C. Ashmore: KB0CKE: Novice: Tech
Jeffery Hansen: None: None: Tech
Wade Costley: KA0YPM: Novice: Tech
David L. Jones: KB0CVV: Novice: Tech
Daniel P. Smith: KA0VEL: Novice: Tech
Rouben N. Steeves: KB0CUY: Novice: Tech
Shannon R. Hubert: KA0ZHP: Novice: Tech

Extra: KD0EL



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BASIC ANTENNAS

Last Month I talked about some basic antennas, for the use of low frequency operation. I also mentioned that I would show you how to take the basic, inverted Vee antenna and improve it's band width, with out the use of an Antenna tuner.

The basic formula expressed in last months text, will get you started, for the overall length. There is one thing however, you will notice right away, that is you will have to shorten the length somewhat, after you introduce the modification, to the existing Vee.

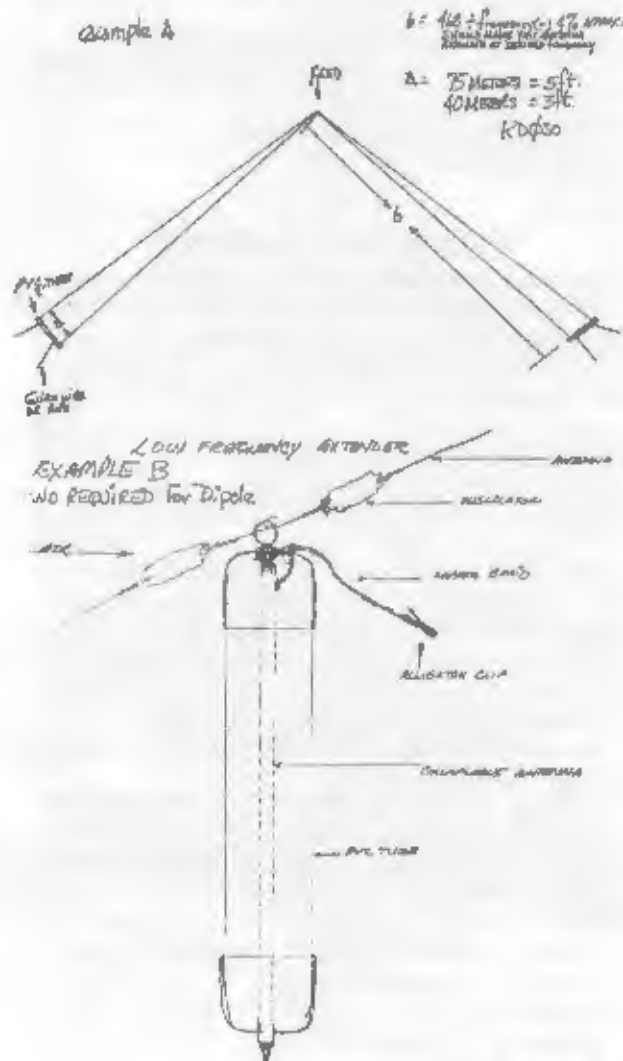
It is a well known fact that the larger the radiating end of the wire the more we introduce a capacitive reactance, or X_c . As the X_c goes up the frequency goes down. To then raise the operating frequency, we must shorten it. So how do we make the radiating end of the antenna, look larger and introduce this desired X_c and increase the bandwidth of the antenna.

Let's look at example A. As you can see, the use of a bridle, will create the "Bow Tie" effect. I have been using antennas like this for some twelve years, and have always gotten excellent results from the antenna. I first got the idea, for such an antenna back in the early 50's, while riding aboard Navy ships. I noticed the antennas of wire, where of the same type and of course the obvious became all to apparent. What works for the government, should be ok for me. The other obvious fact, is that the more wire you have out, the better the capture area of the antenna. That means it can hear better also. So this antenna gives us two major benefits.

The only disadvantage here is, more wire, ergo; more cost. I think however, you will find it a worth while investment. I have only shown two wire here but, you can use four if you like. It will take longer to tune the antenna, to it's resonant frequency. The single addition of the one wire on both sides will show on the average, an increase, of some 200 khz bandwidth at 75 meters. So instead of some 150 Khz, for a single wire, with the "Bow Tie", you will get 350 Khz, not to shabby. You can of course add additional wires and a broader bridle width and achieve, even better results. The additional funds is your decision.

Most people will be satisfied with the 350 figure. Now how would you like to make the antenna variable, so as to lower it's frequency, without a tuner. This too is possible. It most certainly suits the needs of the voice and cw operators say on 75 meters. It won't be necessary for 40 meters, because the antenna will cover the entire bandwidth of the band. We can best do this by adding a little device, which can be made from some in-expensive, common variety, materials. Please note example B. These collapsible antennas are available, at Radio Shack. The costs vary, depending on the antenna length, but with a 36" whip, it is possible to get the antenna to lower, some 120 khz. A standard TV antenna, collapses to 9", and extends to 36". A cheap easy fix. This will give the entire 75 meter band from one antenna. Excepting about 30 Khz. Not to bad and no tuner.

There is nothing like a little wire and some time to really get going on the air. I hope this will help in some way to support the basic low frequency antennas. See ya on 75. **Paul KDQSO**



CLUB PICNIC 88

Fine weather, fine friends, and fine food made for an outstanding Club Picnic this year. As was for last year, it was held at the Air Force Academy Picnic Area #1, courtesy of the AFA Amateur Radio Club. This year we had the added attraction of a miniswapfest which we hope will continue to grow at next year's Picnic.

The Club would like to thank Jim, WA9ABB for the outstanding effort in organizing it this year. There were about 80 club members in attendance.

A volunteer will be needed for next year's picnic. It is never too early. **Kelth NYST**



Renay KAPROY and Jeff NOLH chat it up.



Ron NYF, Hunt, and Jim WA9ABB discuss some important aspect of beer drinking. I mean ham radio.



Ron KACZHR and Wayne NQISV do some final haggling over a piece of gear.



Malcolm KE9S and Dave NQTON hold everyone spellbound with their ham radio sagas.



Jeff NOLH and Les KQANC check out the wares. Now, who gets it? Renay or Jody

DITS & BITS

TELLER COUNTY HILL CLIMB

The 1988 Fall Teller County Hill Climb was held on Sept 24-25 at the Four Mile Road south of Divide, CO. The Colorado Hill Climb Association conducts the races with many volunteer groups helping out.



The PPRAA volunteers were:

W1JU - Harvey and John

N3EUA - Bdale

N1FED - Karen

W9MHL - Mike and the Boss

KE8WC - Don and Mary

WA0TAV - Jim

KA0WIE - Fred and his Boss

NY0T / VO1MA - Keith / Aubrey

W0MCT - Doc

We want to thank everyone for their support and time. The communications were excellent and once again provided valuable help.
Doc W0MCT

AFA RADIO CLUB MINUTES

The Sept Meeting was held at Arnold Hall at 1130 hrs Sept 13, 1988. Jim WA9ABB raised the possibility of providing radio coverage to the AFA Volksmatch. It will be done with assistance from volunteers of the PPRAA. The club is open to all military members, active and retired as well as civilian members working for the service.

The next club meeting will be held on Oct 11, 1988 at 1130 hrs at Arnold Hall.

Submitted by Al N8CMW

COLORADO REPEATER ASSOCIATION NEWS

The CRA has been assigned two new repeater frequencies. These are 145.46 Mhz (-) and 447.200 Mhz (-) respectively. Both these repeaters are scheduled to be installed at their new Riley Peak site during 1989. The Riley Peak site is located 20 miles SW of Denver at an elevation of 9320 ft. The coverage will be very near to that of the Conifer Mountain coverage. The site which is not as deep into the mountains, should give excellent coverage along the foothills. The 145.460 Mhz will be designated an ARES priority repeater, meaning that it is open to normal "ragchew" use at all times except during emergencies, ARES scheduled events and ARES nets. There will be more news next month along with a photo pictorial of one of the new sites that they will be using.

TRIVIA CORNER

A new feature this month is the Trivia Corner. Each month we will put in a piece of trivia for you to identify. **RULES**

1. Mail your response to W1JU 7460 Taos Drive, Colo Spgs, 80920
2. First correct response received wins the prize of the month (this month - free breakfast at Village Inn)
3. Answer will appear in next month's issue.

TRIVIA #1: Seen on a licence plate in town: 3E8MPS. What does it mean?

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DITS & BITS (CONTINUED)

FOR SALE

Kenwood Handheld TH215A w/expanded transmitter, 2 extra battery packs, rapid charger and speaker mike, all like new, asking \$500.00. Also ICOM 38A 220 Mhz, like new, \$330.00 and ICOM 48A 440 Mhz mobile, like new, \$330.00. Will sell both 38 and 48 for \$600.00. Call George Hinds, N3CIX at 687-2610.

FOR SALE

Kenwood TH25AT 2m HT, 3months old, \$225.00 and Yaesu 2m rig, power supply, Larson 5/8 wave antenna. Call Clay Fechter at 632-0784

FOR SALE

220 Mhz HT Kenwood TH31BT. Asking \$175.00. Call Frank Kaltenstein, NØIEM at 596-7980.

FOR SALE

Yaesu FT726R with 2m and 70 cm modules, satellite duplexer board, all ready for OSCAR 13. Sale priced at \$800.00. Call Al Vrooman at 473-1660.

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WANTED

An operating manual and schematic for a KDK FM-2025 MkII. Will pay copying and mailing costs if necessary. Call Nick Hulbert, KG5N at 593-8603

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MINUTES OF SEP GENERAL MEETING

submitted by Al NQCMW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held at the Hewlett-Packard Briargate Facility, Wednesday evening 14 Sep 1988. The meeting was called to order by the president Ron NKOP at 19:30, and followed by the introduction of members and guests.

The minutes of the previous General Meeting and Board meeting were approved as printed in Ø Beal.

Committee Reports

Note: Anyone wishing to help out on any of these committees, please contact the chairman at the phone number listed. Thank you for your support.

Treasurer - Bud NQDDE (599-7699)

Previous balance was \$2441.22, income of \$0058.00, expenses of \$479.10, leaving a balance \$2020.12.

Interference - Ron NKOP (593-8352)

Nothing to report.

Education - Dave N4DJS (531-0633)

It is tentatively scheduled to have the Novice classes start Oct 4, Tuesday and Thursday nights from 7 to 9 pm. Please contact Dave N4DJS 531-0633 or Bruce NOIZR 282-1667 for further info.

Publicity - Karen NIFED (495-0091)

Will be working with the Education Committee to publicize the upcoming Novice classes.

Colorado Council of Amateur Radio

Clubs (CCARC) - Oak KØROL (591-1426)

The CCARC met in the Chapel Hills Mall on Sept 10, 1988 and several local members were in attendance.

Deaf and Blind School - Jim WA9ABB (598-7543)

New classes started on Monday Sept 5. Would like to have one on one coverage for the students. If interested please contact Jim WA9ABB.

Ø Beal - Keith NYOT (637-1525)

Would like to have a volunteer to act as an assistant editor. This would be in the event that Keith NYOT would not be in the area due to a business commitment. Chris NXOE and Fred KAOWIE have volunteered. Thanks.

ARES - Mallory NØIKE (591-0049)

Nothing to report.

Public Service - Mike KØTER (636-1290)

Nothing to report.

VE Testing - Max KDØEL (488-9289)

Max stated that the next VE Testing will be 19 Nov 88 at the 1st United Methodist church at St Vrain and Nevada.

Teller Hill - Doc WØMCT (596-8216)

There will be another call for volunteers for the same race in September (planned for the 24th and 25th). Currently need 3 more people.

Picnic - Jim WA9ABB (598-7543)

Picnic was held on Sunday Aug 28 at Picnic Area #3 at the Air Force Academy. We were the guests of the AFA Radio Club. The picnic was a success due to the hard work of all involved. The 220 HT was won by Frank NØIEM.

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TAB BOOKS

Old Business:
Nil

New Business:

The next Board meeting will be held at the QTH of Bud N0DDF, 99 Old Broadmoor Road. NOTE New location.

The club welcomed Bill KQ0J, the ARRL Section Manager and his wife Edie, KA8MQA who were down from Denver. Bill presented to the Club a Certificate of Merit for its involvement in Public Service Activities and also thanked Bud N0DDF for his assistance during the International Golf Tournament. He also reported that the 18 Mhz will be open in 6 to 8 months for Gen and above. He also stated that he is seeking election for the position of Vice-Director.

Lauren KX8O, gave a talk on the newly formed Boulder Antenna Legal Defence Fund (BALDF). Those people donating funds for the Fund will be eligible for a tax deduction. Lauren is the Colorado Springs rep. He also went on to state that the amateur community has been handed a severe setback by the local Federal Judge and it will take about \$50,000 in legal costs to reverse this decision.

Steve, KB7WF gave a talk on the ARRL National Convention that he attended in Portland, Oregon.

After the presentation, Ron, NK8P asked for a show of hands of those who would like to have the next meeting at the same HP facility. The vote was unanimous.

Prizes - Keith NY8T:

Winners were:

W0RTB-Harry-Antenna Book
KD8NB-AJ-Exacto Knives
WB2EVR-Bill-Alignment Tool Kit
K6UIX-Paul-ARRL Operating Manual
NX8E-Chris-Roll of Solder
KA8MQA-Edie-Utility Knife
KE8PA-Roger-Advanced Manual
KA8YZV-John-Books/Manuals
W1JU-Harvey-Scope
WB2EVR-Bill-TRS 80 Manuals

Program:

Doug W0KIT gave a very fascinating talk on the CRAY computer system, known as the fastest computer in the world. We would like to thank him for the professional presentation that he delivered to the Club.

The meeting was adjourned at 2130
The next meeting will be 12 Oct 88

Minutes of the Sep Board Meeting

submitted by Al N0CMW

The sept Board Meeting was held at the QTH of Bud N0DDF. In attendance were Bud N0DDF, Al N0CMW, and Ron NK8P.

The Club will make a \$300.00 donation to the Boulder Antenna Legal Defence Fund.

For the next meeting, the Club will procure the coffee and donuts. All members are asked to make a donation of 25 cents to help defray the costs.

The club would like to apologize to Mary Chatelain KYL of KE8WC for not listing her as being in charge of the 8-Beat distribution for the local Radio Shack stores.

A notice to Board members, it will be helpful to the person hosting the Board Meeting if you can tell him if you can attend or not. It helps in determining how much coffee and fat pills that will have to be procured!

Here is a run-down on the elections that will be held at the next Club Meeting:

The following have indicated to the Board that they will volunteer for the positions indicated:

President-Keith Goobie-NY8T
Vice President-Rick Kile-WB7THT
Secretary-Al Vrooman-N0CMW
Treasurer-Ron Deutsch-NK8P
Board Member-Doug Brower-N0HJT
Board Member-Mark Richardson-N0EPF
Board Member-EJ Lund-KN8NB
Board Member-Dave Ritchie-N4DJ5

The above list only represents those who have volunteered. If you want to run for any of the positions listed above, you are more than welcome. It is your club and you can make it that way by voting.

A Board Member is elected for two years. The only exception is if someone fills in for another who has resigned after the first year. These on the their first year are:

Al Vrooman-N0CMW-Who will be Board Member if not re-elected Secretary
Keith Goobie-NY8T-Who will be Board Member if not elected President
Bud Libbengood N0DDF-Board Member
BDale Garbee-N3EUA-Board Member

The Board is comprised of eight members four officers and four members at large.

MILEY'S RADIO

Jess KØTAA 719 W. 7th St. Florence, Colorado 81226 (719) 784-3040
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Hamfest Schedule for 1988 as of August 1:

September 24 Sat. Only Santa Fe, NM
National Guard Armory
October 9 Lubbock, TX
October 21, 22, 23 El Paso, TX
Nov. 4, 5, 6 Odessa, TX

End of '88 Hamfest Schedule

Kenwood TS520 80-10M \$400.
Kenwood TS820S 160-10M \$495.
Yaesu 101ZD 160-10M Digital \$495.
Yaesu FV 901DM Scanning VFO w/Memory for 901/101ZD \$275.
Yaesu YO100 Scope \$150.
Yaesu SP901 Speaker \$35.
Yaesu FR101 Matching Recvr for 101 series \$275.
Yaesu FT101B \$375.
Drake C4 Console w/Remote Ant. Switch - Call
Cushcraft R3 Vertical 10, 15, 20 meter w/control \$150.

73's — Jess

9/88

Membership Application PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

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Additional Names _____ Call _____ Class _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)